



Root-knot Nematodes: Biocontrol with Marigolds

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Root-knot nematodes (*Meloidogyne* spp.) can be effectively managed in home gardens without pesticides. One alternative to using nematicides is to intercrop and rotate vegetables with marigolds. Most cultivars of African marigold (*Tagetes erecta*) and French marigold (*T. patula*) are effective in reducing the most common root-knot nematode populations — *Meloidogyne incognita* and *M. javanica* (TABLE 1).

The roots of these attractive flowering plants contain chemicals that kill nematodes. As a method of biocontrol, growing marigolds is not only pleasing to the eye but economically and environmentally sound as well. One drawback, however, is that the benefits are not realized until the following year. Also, the treatment frequently needs to be repeated with marigolds and vegetables grown in alternate years.

Be careful when you buy marigolds to help control nematodes. Not all marigolds sold as bedding plants are effective against nematodes. *Tagetes signata* cv. Tangerine Gem, for example, will not control root-knot nematode.

To use marigolds to manage root-knot nematodes, follow these steps.

- Collect a soil sample from the rhizosphere (root zone) of a living, but apparently unhealthy, plant. Include roots in the sample. Submit this sample to the Nematode Assay Section of the NCDA&CS Agronomic Division to verify that root-knot nematode is the problem. It is also a good idea to send a separate soil sample to the Soil Testing Section for lime and fertilizer recommendations.
- At the end of the growing season, remove roots from the soil by pulling, plowing or tilling. Doing so will reduce the number of safe places where nematodes can survive during the winter.
- In winter, till the soil several times to expose nematodes to sun and weather.
- Apply lime according to soil test recommendations.
- In spring, plant half the garden with marigolds and half with root-knot resistant vegetable cultivars. Plantings in blocks or strips are easy to manage (FIGURE 1). Strips may comprise one or several rows of vegetables.

TABLE 1. Some marigold cultivars effective against root-knot nematode *Meloidogyne incognita*.*

Species	Cultivars
<i>Tagetes erecta</i>	Crackerjack, Flor de Muerto
<i>Tagetes patula</i>	Bonita Mixed, Gypsy Sunshine, Scarlet Sophia, Single Gold, Tangerine

* Ploeg AT. 1999. Greenhouse studies on the effect of marigolds (*Tagetes* spp.) on four *Meloidogyne* species. J Nematol 31(1):62–9.

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